# Service Quality Measurements
## Measurement Detail

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|---|---|
| | • Typical databases for which standards are currently expected are AIN, LIDB and 800 Number. |

| Reporting Dimensions: | Excluded Situations: |
|---|---|
| • By unique UNE or UNE combinations requested by the CLECs | • None |

| Data Retained Relating To CLEC Experience: | Data Retained Relating To ILEC Performance: |
|---|---|
| • Month<br>• Element or Element Combination Identification<br>• Result for Agreed Upon Availability Parameter | • To Be Determined |

| Performance Standard in Absence of ILEC Results | If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:<br>• Performance Standards in this area are yet to be published. |

| Function: | Performance of Network Elements |
|---|---|
| Business Implications: | As CLECs use individual elements (as well as element combinations) to deliver unique services, it is essential that the UNE functionality operates in a timely manner because of the crucial role played by such elements in providing quality retail services. This measure monitors individual network element (or element combinations) that do not have an apparent retail analog. CLECs must be afforded a meaningful opportunity to compete when element (or combination) functionality is utilized. |
| Measurement Methodology: | **Timeliness of Element Performance = (Number of Times Functionality Executes Successfully Within the Established Timeliness Standard)/(Number of Times Execution of Functionality was Attempted)**<br><br>**For CLEC Results:** Timeliness will be measured for each unique UNE (or combination of UNEs) that delivers unique functionality. The number of times that the functionality executes properly within the established standard time frame will be accumulated and shown in comparison to the number of times that the execution of the functionality was requested or initiated.<br><br>Illustrative examples of timeliness measures are shown below:<br>• Database: % transactions experiencing time-outs<br>• Post Dial Delay: % calls routed to CLEC OS platform within 2 seconds<br><br>**For ILEC Results:** Identical measurements are performed where the ILEC employs the same or reasonably comparable functionality. Where such analogs do not exist, the ILEC is expected to establish benchmark performance levels jointly with the CLEC requesting the functionality.<br><br>**Other Clarifications and Qualification:**<br>• The preceding list of elements is illustrative and is not to be considered exhaustive<br>• ILEC failure to provide comparably timely performance when using comparable functionality constitutes discriminatory access. Where comparable functionality is not employed, failure to meet or exceed parameters negotiated with the CLEC also is discrimination. |

# Service Quality Measurements
## Measurement Detail

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|---|---|
|  | • For each element (or element combination) requested where a retail analog is not identified, the ILEC is expected to establish both a timeliness measure and a timeliness standard (ILEC functional analog or benchmark) jointly with the requesting CLEC unless that CLEC waives its right for such a measure.<br>• Typical databases for which standards are currently expected are AIN, LIDB and 800 Number.<br>• Comparisons of performance should be based upon the criteria for which the element was engineered. For example, if the element was engineered based upon average busy hour criteria, the comparison should be based upon the CLEC busy hour period (likewise for criteria such as busy day, busy season, or ten high days). |
| **Reporting Dimensions:** | **Excluded Situations:** |
| • By unique UNE or UNE combinations requested by the CLECs | • None |
| **Data Retained Relating To CLEC Experience:** | **Data Retained Relating to ILEC Performance:** |
| • Month<br>• Element or Element Combination Identification<br>• Result for Agreed Upon Availability Parameter | • To Be Determined |
| **Performance Standard in Absence of ILEC Results:** | If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:<br>• Performance Standards in this area are yet to be published. |

## Appendix A: Reporting Dimensions

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| **Service Types:** | • Resold Residence POTS<br>• Resold Business POTS<br>• Resold BRI ISDN<br>• Resold PRI ISDN<br>• Resold Centrex/Centrex-like<br>• Resold Analog PBX trunks<br>• Resold DID Trunks<br>• Resold Voice-Grade Private Line<br>• Resold DS1 Services<br>• Resold DS3 Services<br>• Resold >DS3 Services<br>• Other Resold Services<br>• UNE Platform (at least DS0 loop + local switch + transport elements)<br>• UNE Channelized DS1 (DS1 loop + multiplexing)<br>• Unbundled or UNE-derived 8 dB Analog Loops<br>• Unbundled or UNE-derived 2-wire Digital Loops<br>• Unbundled or UNE-derived 4-wire Digital Loops<br>• Unbundled or UNE-derived ADSL Loops<br>• Unbundled or UNE-derived HDSL Loops<br>• Unbundled or UNE-derived xDSL Loops<br>• Other Unbuondled or UNE-derived Loops<br>• UNE Analog Switch Port (line side)<br>• UNE BRI Capable Switch Port (line side)<br>• UNE DS1 Switch Port (line side)<br>• UNE PRI Switch Port (trunk side)<br>• UNE DID-capable Switch Port (trunk side)<br>• UNE Message Trunk Port<br>• UNE Dedicated DS0 Transport<br>• UNE Dedicated DS1 Transport<br>• UNE Dedicated DS3 Transport<br>• Interconnect Trunks (DS0s, DS1s and DS3s,<br>• Two-Way Trunking, Inbound Augments, separately)<br>• Common Transport<br>• ILNP<br>• PNP<br>• ILNP-to-LNP conversions |
| **Standard Order Activities:** | • New Service Installations<br>• Service Migrations Without Changes<br>• Service Migrations With Changes<br>• Local Number Porting<br>• Inside Move<br>• Outside Move<br>• Records Change<br>• Feature Changes<br>• Service Disconnects<br>• Translation Disconnects<br>• Standalone Directory Listing (DL)<br>• Standalone Directory Assistance (DA) Listing<br>• Standalone DL & DA Activity |

# Service Quality Measurements
## Appendix A: Reporting Dimensions

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|---|---|
| **Pre-Ordering Query Types:** | • Due Date Reservation (if separate transaction from Appointment Scheduling)<br>• Feature Function Availability<br>• Facility Availability (if separate transaction from Feature/Function Availability)<br>• Qualification of Loops for Advanced Digital Services<br>• Street Address Validation<br>• Service Availability Information (if separate transaction from Feature/Function Availability)<br>• Appointment Scheduling<br>• Customer Service Records<br>• Telephone Number<br>• Rejected or Failed Queries (regardless of type) |
| **Maintenance Query Types** | • Create (or confirm logging of) a Maintenance Request<br>• Obtain Status<br>• Obtain Test Results<br>• Cancel Request<br>• Rejected of Failed Queries (regardless of type)<br>• Clearance Notification<br>• Closure Notification |
| **Order Rejection Reason Codes** | • Invalid Address<br>• Address Errors<br>• End User Name Doesn't Match ILEC Records<br>• Incorrect Directory Assistance Listing/Due Date<br>• Duplicate PON<br>• Winback (Customer Returned to ILEC)<br>• ILEC System Problem<br>• TN Already Disconnected |
| **Transmission Quality Parameter:** | • Subscriber Loop Loss<br>• Signal to Noise Ratio<br>• Idle Channel Circuit Noise<br>• Loop-Circuit Balance<br>• Circuit Notched Noise<br>• Attenuation Distortion |
| **Collocation Provisioning Types:** | • Physical within CO (space available at time of request)<br>• Physical within CO (space created in response to request)<br>• Physical outside of CO (space available at time of request)<br>• Physical outside of CO (space created in response to request)<br>• Virtual<br>• Backhauling to neighboring CO<br>• Access to GR-303 compatible concentration equipment (leased UNE alternative)<br>• Other alternatives to physical |
| **Databases and Switch Tables:** | • E911/911 ALI, Selective Router<br>• MSAG<br>• LIDB<br>• OS/DA<br>• DL<br>• NXX tables at CO for call completion and NXX routing<br>• NXX tables at tandem for call completion and NXX routing |

# Service Quality Measurements
## Appendix A: Reporting Dimensions

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| **Reportable Network Incidents:** | ***Switching (Local/Tandem):***<br>• Complete loss of call processing capability from a switch (host/remotes) lasting = > 2 minutes or longer.<br>• Network Incident (Loss of Dial Tone) affecting one thousand access lines.<br>• Media Interest: Any interruption or outage that may cause public or news media attention.<br><br>***Transport:***<br>• <u>EQUIPMENT AND/OR FACILITY FAILURES</u><br><br>• Local (200 or more working pairs affected, causing loss of dial tone)<br>• Toll/EAS (Isolation of an entire exchange) > 2 minutes.<br>• Fiber (Any working fiber providing customer service that fails without protection) lasting > 2 Minutes.<br>• A transport equipment failure (E.G. DACS) > 2 minutes.<br><br>• <u>BROADBAND</u><br><br>• Frame Relay (A failure of one or more channelized T1 carrier systems or two or more non-channelized T1 carrier systems.<br>• ATM (A failure of one OC3 or two DS3s)<br>• SMDS (A failure of one DS3 or four T1s)<br>• Packet Switching (Any failure of an access module (AM) or resource module (RM)<br><br>• <u>NARROWBAND</u><br><br>• 5 T1 carrier systems (within a switch)<br>• Fiber (Any working fiber providing customer service that falls without protection)<br>• Media Interest: Any interruption or outage that may cause public or news media attention.<br><br>***SS7:***<br>• Loss of mated pair of STP or SCP > 2 minutes<br>• Media Interest: Any interruption or outage that may cause public or news media attention<br><br>***Trunking:***<br>• Loss of intra/interoffice calling lasting > 2 minutes. (E.G. Toll and/or EAS)<br>• Media Interest: Any interruption or outage that may cause public or news media attention<br><br>***911:***<br>• A central office isolation from the E911 network for = > 2 minutes or longer.<br>• Loss of 25% or more of the trunking capabilities from an E911 tandem to the PSAPs it serves for = > 2 minutes or longer (e.g. translations, trunking frame failure, etc.)<br>• A PSAP isolation from the E911 network for = > 2 minutes or longer (e.g. translations, trunking problems, etc.)<br>• A transport cable failure that isolates a central office from the E911 network; (Local switch to the E911 tandem) transport cable failure that isolates a PSAP from the E911 tandem;- A transport cable failure that results in the loss of 25% or more of the trunks/circuits (aggregate from an E911 tandem to the PSAPs served by that Tandem; A transport equipment failure that isolates a |

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| | central office from the E911 network; A transport equipment failure that isolates a Public Safety Answering Point (PSAP) tandem.; or A transport equipment failure that results in the loss of 25% or more of the trunks/circuits (aggregate) from an E911 tandem to the PSAPs served by that tandem.<br><br>• Federal Government, equipment or facility affecting 5 or more military special communication, isolations of FAA location or air ground facilities.- State and local agencies interruptions seriously affecting service to police, fire departments, hospitals, press, military, PBS's |
| **Trouble Types** | • Inside (Central Office) Dispatch - Out of Service<br>• Outside Dispatch - Out of Service<br>• Inside Dispatch – Degraded Service<br>• Outside Dispatch – Degraded Service<br>• No Access or No Trouble Found<br>• NXXs not loaded properly by ILEC<br>• NXXs not loaded properly by party other than CLEC/ILEC<br>• All Other Troubles<br><br>*"Out of Service" means that the customer has no dial tone.*<br>*"Dispatch" means that ILEC repair personnel must be dispatched to a location outside an ILEC building (to customer premises or other off-site facilities) to resolve the trouble.* |

## Appendix B: Glossary

| *Term:* | *Definition:* |
|---|---|
| Abandoned Call: | An abandoned call occurs when the caller hangs up after the call has been delivered, but before the receiving party has answered the call. |
| Automatic Location Identification: | A proprietary database developed for E911 systems that provides for a visual display of the caller's telephone number, address and the names of the emergency response agencies that are responsible for that address. The ALI also shows an interim number portability telephone number if applicable. |
| Attenuation Distortion: | Attenuation Distortion measures the variation in loss at different frequencies across the voice frequency spectrum (200Hz – 3400 Hz). |
| Call Completion Rate: | The call completion rate for CLEC customers is determined by calculating the total number of calls placed by CLEC customers that were completed to the calling destination. The number of completed calls is then divided by the total # of call attempts made by CLEC customers during the reporting period. |
| Call Delivery Rate: | The call delivery rate for CLEC customers is determined by calculating the total # of calls received by CLEC customers. This number of delivered calls is then divided by the total # of call attempts received by the ILEC for termination to CLEC customers. |
| Common Trunks | Trunks carrying the traffic from more than one carrier, such as the trunking between a tandem switch and end office switches. |
| Completion: | A completion is the transaction that the ILEC sends to the CLEC to inform the CLEC that a requested order has been completed. |
| Dial Tone Delay: | The dial tone delay is determined for each trial completed during the reporting period by computing the time that transpires from a customer's going off-hook and the receipt of dial tone from the servicing central office. It should be measured in seconds and tenths of seconds. Post dial delay for each trial is determined for each trial completed during the reporting period by computing the time that transpires from when the last digit is dialed until a valid response is received by the customer. It should be measured in seconds and tenths of seconds |
| Direct End Office Trunks | Trunking from the serving central office to the central office switch (Class 5) used to connect subscriber loops. |
| Directory Assistance Database: | The database containing subscriber records used to provide live or automated operator-assisted directory assistance, including 411, 555-1212, NPA-555-1212. |
| Directory Listings: | Subscriber information, including name, address and phone numbers, that is published in any media, including traditional white/yellow page directories, CD ROM and other electronic formats. |

# Service Quality Measurements
## Appendix B: Glossary

| Term: | Definition: |
|---|---|
| FOC: | A FOC is a Firm Order Confirmation notification, which is the transaction that the ILEC will send to the CLEC to confirm that an order can be completed. |
| GR303-Compliant Loop Access Concentration | An alternative to physical and virtual collocation that enables CLECs to serve a greater number of unbundled loops with less transport and collocation costs through leasing GR303-compliant remote digital terminals (RDTs) (as an unbundled network element priced on forward-looking costs)—from the ILECs. Loops are then ordered to the RDTs and carried over leased transport to the CLEC's collocation area. Bellcore General Requirements-303 describes a family of generic criteria for integrated access systems that includes open interfaces for mix-and-match of (1) local digital switches with RDTs as well as (2) remote digital terminals and element management systems. |
| Held Orders: | Held orders are orders that the ILEC has confirmed (an FOC was returned to the CLEC) and that are overdue. |
| Idle Channel Circuit Noise: | The idle channel circuit noise for each trial is determined for each trial completed during the reporting month by computing the difference between the noise that exists in the channel when no signals are present and the reference noise. The resulting accumulated idle channel circuit noise for all trials is divided by the total # of trials completed during the reporting period. |
| Interface: | The interface is the ILEC interface that allows the CLEC to access the ILEC system |
| Interim Local Number Portability: | An interim service arrangement, such as by use of remote call forwarding, whereby subscribers who change local service providers may retain existing telephone numbers without impairment of quality, reliability or convenience when changing local service providers and remaining in their current location or changing their location or changing their location within the geographic area service by the initial carrier. |
| Internal or Administrative Use: | The carrier's use for intra-company communications or for operation of its business. |
| Jeopardy: | A jeopardy is a transaction that the ILEC sends to the CLEC to inform the CLEC that a previous order cannot be processed as specified in the original FOC. |
| Line Information Database | A signal control point database (linked by common channel signaling to other points in the network) that provides for such functions as calling card validation for telephone number cards issued by ILECs and other entities and validation for collect and billed-to-third-party services. |

# Service Quality Measurements
## Appendix B: Glossary

| Term: | Definition: |
|-------|-------------|
| Loop-circuit Balance: | Loops-circuit balance should be measured in decibels and tenths of decibels above the reference noise. "Attenuation Distortion" should measure the variation in loss at different frequencies across the voice frequency spectrum (200Hz – 3400 Hz). It should be measured from the NID to the switch, and from the switch to the NID. It is measured by subtracting the loss at 1004 Hz from the loss at the frequency of interest, and should be reflected in tenths of decibels. |
| Master Street Address Guide: | A database defining the geographic area of an E911 service. It includes an alphabetical list of the street names, high-low house number ranges, community names and emergency service numbers provided by the counties or their agents. |
| Network Incident: | A network incident is an unplanned network occurrence that results in blocked calls |
| NXX: | The three-digit code that indicates the central office switch serving the called party. The NXX is the fourth, fifth and sixth digits of a telephone number as established within the North American Numbering Plan. |
| Physical Collocation: | A form of carrier network interconnection where the ILEC designates space on the floor of its central office for the CLEC to build a cage for its transmission equipment. With physical collocation, the CLEC services and maintains its own equipment. |
| Permanent Number Portability or Number Portability: | A long-term service arrangement whereby users of telecommunications services retain, at the same location, existing telephone numbers without impairment of quality, reliability or convenience when switching from one telecommunications carrier to another. |
| Post Dial Delay: | Post dial delay is the time that transpires from when the last digit is dialed until a valid response is received by the customer |
| Public Safety Answering Point | A public safety communications center that receives 911 calls placed by the public in a specific geographic area. |
| Return of Valid Completion: | Receipt of notification that service has been installed or is being provided to the customer and such service has been installed or provided. |
| Selective Router | A database service that automatically routes an E911 call to the PSAP that has jurisdictional responsibility for the service address of the telephone that dialed 911, irrespective of the telephone company exchange or wire center boundaries. |
| Signal to Noise Ratio: | Signal to Noise ratio is the ratio of usable signal being transmitted to the noise or undesired signal. |

# Service Quality Measurements
## Appendix B: Glossary

| Term: | Definition: |
|---|---|
| Subscriber Loop Loss: | Subscriber loop loss is determined by computing the difference between the strength of the signal as it enters the loop and the strength of the transmitted signal. Signal strength is measured in decibels rounded to the nearest tenth of a decibel. The total number of trials completed during the reporting period divides the resulting accumulated decimal strength. |
| Subsequent Reports: | Customer trouble reports where the customer calls to check on the status of a previous trouble report (initial or repeat) that has not been cleared (closed or resolved) at the time of the call. |
| Syntax Reject: | A syntax reject is the transaction that an ILEC will return to a CLEC when a the CLEC has submitted an order transaction that the ILEC's gateway cannot process due to violation of published rules for formatting or content. |
| System: | The system is the combination of ILEC gateways, communications links, hardware and software that, in combination, is used to perform or support business functions or executes supporting transactions. |
| Tandem | A switch between a serving wire center and the end office switches that enables multiple carriers to trunk to one point rather than provide direct end office terminations to all switches. |
| Trouble Appointment: | A trouble appointment is a commitment made by the ILEC (to CLEC or to customer) to resolve a trouble. |
| Troubles: | Troubles include all reported difficulties with performance of resold services or UNEs, whether the report is the initial or a repeated report, that the CLEC refers to the ILEC repair process/interface for resolution. Subsequent reports are categorized separately. |
| Virtual Collocation: | A form of carrier network interconnection where the CLEC provides its transmission equipment to the ILEC to install in the ILEC's network. The ILEC then services and maintains the equipment for the CLEC. |